

Full Length Research Paper

The influence of WebQuest learning in teaching of sexually transmitted diseases in adult education and training

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The present study describes an experience that involved the development of a long lasting WebQuest in an adult education and training course, from the secondary education level, on the theme “Sexually Transmitted Diseases”. A case study was developed with the purpose of verifying if the WebQuest foments the trainees’ motivation and commitment towards learning and if it facilitates the research and interpretation of the information available online, in the production of the end result; to listen to the trainees’ opinions on the fulfilment of the WebQuest, the written assignment and the informational bulletin; to increase the trainees’ informatics skills and contribute to prepare 21st century citizens. The results of the study sustain that the WebQuest improved the constructive role of the trainees in the comprehension of the “Sexually Transmitted Diseases” theme, stimulated the acquisition of competences at the informatics level and contributed to make them become citizens that are more active and critically prepared for decision-making in the global information and knowledge society of the 21st century.

Key words: WebQuest, adult education and training, Web 2.0.

INTRODUCTION

The Information and Communication Technologies (ICT) led to the appearance of new knowledge construction spaces. Therefore, the ICT's can and must be used in schools not only to make students/trainees and teachers/trainers smarter, but also truly wise, in the sense recognised by Prensky (2009), when he speaks about “Digital Wisdom”. In the author's opinion, digital wisdom is a double concept that refers to both the wisdom resulting from the use of the digital technology, as a way to stretch natural capabilities and cognitive power, as well as to the caution in the use of technology to improve capabilities. In the 90's, the Web 1.0 era was relatively static, that is, the users had a passive role as observers and content consumers. We were in the Web 1.0 era. From this moment on, the Web began to have sound, movement and image, with growing user participation, moving to a second stage of greater maturity, the Web

2.0. With the numberless free and easy to publish Web 2.0 tools, the teacher/trainer has in his hands a large number of new opportunities to promote close to his students/trainees, an authentic learning process, contributing for the development of competences inherent to the discipline or curricular area and preparing citizens which are aware of the plural and permanently expanding society. With this in mind, the digital technology will make students/trainees wiser in digital terms. That is, the digital wise man looks at a case, investigates, analyses and evaluates its positive and negative aspects as well as, increasing in this way its own ability to comprehend, reflect and make decisions. This way, teachers/trainers will be contributing for the development and preparation of citizens for the information and knowledge society.

One of the resources to render available in the Web is the WebQuest. The term WebQuest (Web adventure) was created by Bernie Dodge and Tom March. It was in 1995 that it all began. Bernie Dodge and Tom March, both Educational Technology teachers, created a unique methodology for the use of the internet in the classroom,

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aimed at the collaborative learning of any subject in any given school level. It is still today an efficient methodology to reach the educational objectives, taking advantage of the potentialities offered by the Web. This way, the WebQuest combines the new technology to the idea of learning through research. A WebQuest is a work methodology proposal, conceived and implemented by teachers, to be solved by the students, in group, taking advantage of the information partially or totally accessed from resources available in the Web (Dodge, 1995). The WebQuest, by making possible the learning of a given content and/or theme, and by allowing the digital inclusion, promotes the digital wisdom of students/trainees, who will live in the learning society of the 21st century.

In this study, a WebQuest is used to acquire knowledge on the "Sexually Transmitted Diseases", without any previous introduction to it. This study's objectives were:

To verify if the WebQuest foments the motivation and commitment of the trainees towards learning, in the knowledge construction process and in the accomplishment of the end result; to listen to the trainees' opinions on the fulfilment of the WebQuest, the written assignment and the informational bulletin; to verify if the WebQuest helps the research process and the interpretation of the information available online, during the accomplishment of the end result; to widen the trainees' informatics competences; to contribute to form 21st century citizens.

The importance of the study relates to the care taken during the formation of working groups. Three Groups I elements was chosen taking into account the complexity of the task and degree of difficulty presented by some students at the level of computer technologies. The way groups have joined even though it was their free will; the trainees were concerned to form heterogeneous groups so as to equalize the levels of learning within the group and between groups. Nesye study implications for the organization of groups taking into account the principles of cooperative learning that have been subject to agreement with the role defined for each element in the WebQuest.

Similarly, looking to the conduct of activities together to promote cooperative learning was justified in this study by the lack of studies on the use of WebQuests as a way to make accessible to students graduating in Adult Education and Training tools of Web 2.0, logic of inclusion. Thus, the importance of using ICT demonstrates as cognitive tools that learners become competent citizens in the 21st century.

SECONDARY EDUCATION LEVEL ADULT EDUCATION AND TRAINING IN PORTUGAL

In Portugal, it was mostly after 1999, that an increased concern was noted over the Adult Education and

Training, due to the fact that it was one of the European countries that revealed the most fragile school and professional qualification levels, among its adult population. From 2001 to 2003, the National Agency for Adult Education and Training (ANEFA), promoted not only the adult certification in the basic teaching level, but also "the widening of this model and intervention strategy to the adults who did not have the 12th grade" (Executive Rule nº1082-A/2001, of September 5). Meanwhile, in 2005, around 3.500.000 of the Portuguese active individuals remained with a school level inferior to the secondary education, from which about 2.600.000 did not yet have the basic school level. These indicators, besides revealing by themselves a continuous position of disfavour regarding its European partners, also remained as an obstacle to economic development, social well-being, quality of life and social participation of the Portuguese population. In this context, the secondary education level Adult Education and Training Courses (AET) integrate the "New Opportunities Initiative", developing a path, opened and defined by ANEFA, and later by the "Direcção Geral de Formação Vocacional" (DGFV) (General Directorate for Vocational Education and Training), reinforced with the creation of the "Agência Nacional para a Qualificação" (ANQ) (National Qualifications Agency) (Canelas et al., 2007).

In this logic, the New Opportunities Initiative established as a priority role, the rise of the qualification levels of the Portuguese population, defining as the minimum baseline the secondary education level (12th grade). It is in this context that the AET's present a particular relevance, since their organization is based on a secondary education Key Competences Referential, allowing, in this way, for the adults' life experience to be valued and complemented with a training path (Canelas et al., 2007).

Secondary education key competences referential

The main goal of the Adult Education and Training Courses is to recognize, validate and certify key competences of the adult population, as an innovative process that derives mainly from lifelong learning and training strategies. With this in mind, the referential is based on an organization of three key competences areas:

Citizenship and professionalism (CP); Society, technology and science (STS); and culture, language and communication (CLC) (Gomes et al., 2006)

The citizenship and professionalism (CP) assumes a transversal character, by reflecting knowledge, behaviours and articulated and integrative attitudes from the other key competences areas (Figure 1). On its turn, both areas - Society, technology and science (STS) and

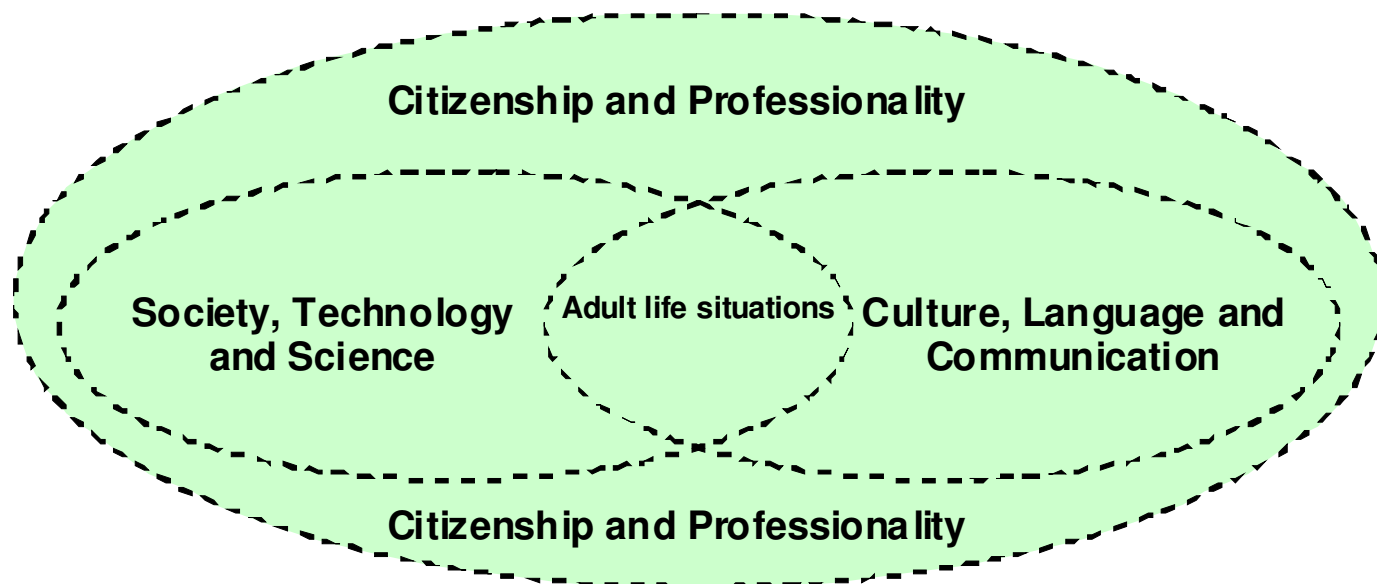


Figure 1. Scheme of the key competences for the secondary education level adult education and training (Gomes et al., 2006: 24).

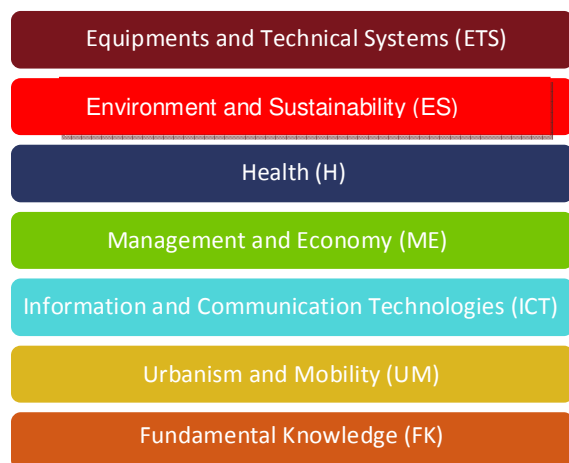


Figure 2. Generating cores of each of the competence units (Gomes et al., 2006: 50).

culture, language and communication (CLC) – are considered to be of an instrumental and operational nature, involving domains of specific competences and covering very different scientific and technical fields, although using equal structures and the same conceptual reference elements (Gomes et al., 2006).

Next, this study will make a brief approach to the STS area, since it is the integrating area of the study.

The key competence area - Society, technology and science

The Society, Technology and Science (STS) area includes a set of key competences that covers diverse

scientific fields, from Social and Human Sciences (Sociology, History, Anthropology and Geography) to Natural and Exact Sciences (Physics, Chemistry, Biology, Medical Sciences, Mathematics) and Economic and Management Sciences (Economics, Finance, Management, Accounting and Marketing) (Gomes et al., 2006).

In order to guarantee the Competences' contextualised character, the Society, Technology and Science area is structured around seven large cores (Generating Cores), which project Science and Technology in Society (Figure 2) (Gomes et al., 2006). This study focused on the third Generating Core – “Health”.

THE CONTRIBUTION OF THE WORLD WIDE WEB TO LEARNING

Major contribution of the “world wide web” and the WebQuest as a teaching-learning strategy

Very recently, teaching was based almost exclusively on content study from schoolbook. It was from the late 90's that a more generalized use of the World Wide Web began, propelling a transition in the society, which evolved towards a Society of Information, knowledge and learning, allowing for a number of people to gain access to information, as well as to have a more active participation in the virtual space. The “world wide web” was initially conceived with the intent of being a human knowledge repository and also becoming a place for sharing. With this in mind, the teachers/trainers must be able to explore the educational potential of the Web, creating diversified learning methodologies, such as the WebQuests, based on the multiple resources of the

“web”. By solving a WebQuest, the students/trainees research in the “web, acquiring knowledge in an intentional manner and guided by pre-established learning objectives.

The paradigm change in the “web”

Initially, the “web” was essentially “read” by the user, with nothing more than a set of texts with hyperlinks. The main characteristic of the first phase, designated as Web 1.0, was the placement of an enormous quantity of available information, to which everyone could access, but where the user was a mere spectator, who passed by the page he visited, not having authorization to change or re-edit its content (Coutinho and Bottentuit, 2007). The change in the “web” paradigm occurred in a subtle way, almost without anyone having noticed it. Of course the applications’ technical evolution was important, but what really changed were the attitude and the role of the user before the system: in the Web 2.0, users shifted from mere spectators, to content producers who publish in the web in a free, gratuitous and democratic manner, without the need for good programming knowledge (Coutinho, and Bottentuit 2007).

There are several tools available in the Web which use(s) the new 2.0 paradigm, from which Coutinho and Bottentuit (2007: 200) pointed out the following:

- i) Blogs, Hi5, Messenger; which allow creating social networks.
- ii) Wikis, Google Docs and spreadsheets; collaborative writing tools.
- iii) SKYPE, Messenger, Voip, Google Talk; online communication tools.
- iv) You-tube, Google videos, Yahoo Videos; video access tools.
- v) Blogs, podcasts and wikis; online editing tools.

Considering this, the Web 2.0 excels for its easy publishing and fast text and file storage (Coutinho and Bottentuit, 2007, 2008b, c).

The “web” 2.0 in the teaching-learning process

Education has been one of the areas that have benefited the most with the eruption of the Web 2.0 tools. With this in mind, the teacher must be able to involve the students in the learning process, preparing them for this “new form of being, where everyone is a consumer and producer of the ‘globalized and competitive society” (Carvalho, 2007b: 36). One of the main benefits for education of the Web 2.0 tools is to favour cooperation among peers and not requiring from the user an advanced technological literacy. It can then state that the “learning 2.0” is based on the basic principles of the current Web, which are: contents created by users and architecture of

participation (Coutinho and Bottentuit, 2009).

METHODOLOGY

Considering the objectives of this study, the adopted methodology had a predominantly qualitative nature, within the general configuration of the mixed scope case study, in which, besides the methods of qualitative nature used in the data gathering and analysis, others of a quantitative nature were integrated in a “descriptive statistics form” (Bogdan and Biklen, 1994: 194). In this study, the case was built by trainees of two of the researcher’s classes, from the Adult Education and Training Course, to who a WebQuest was presented in a natural classroom context. The researchers conceived a WebQuest on the theme:

“Sexually Transmitted Diseases”

The WebQuest was solved by the trainees between the 5th and 20th of March of 2009 (Table 1). The researchers were present in every class destined to the WebQuest solving, being careful to write down all of the pertinent observations and register, in the class logbook and the observation grid, the reactions and positive and/or negative comments that the trainees would experiment throughout all of the process. Considering the characteristics of the class, the complexity of the Task and the time available for its fulfilment, groups of 3 elements was chosen, in alternative to peer work. For the groups’ formation, the trainees’ collaboration was opted. For such, it was explained to them the need to form heterogeneous groups in terms of knowledge, informatics skills and on the study’s theme. All the trainees agreed to a heterogeneous group formation and, in this way, the requirements was managed to conciliate with the sense of belonging that each group element must have and is needed to promote the positive interdependence and the individual evaluation and accountability (Freitas and Freitas, 2003).

The participants of this study were the trainees from two classes of the secondary education level Adult Education and Training course, from the 2nd and 3rd level Basic School of Tadm (Braga-Portugal). In what regards class formation, the EFA 1 and EFA 2 classes had 10 trainees each. The average age of both of these classes’ trainees was 27. As for the school year presented by the trainees, most (85%) had the 9th grade, that is, the minimum mandatory school level, except for 3 trainees (15%) who had the 10th grade. Although, both classes did not work in all of the sessions in the same physical space for logistical reasons, and to which the researchers were not responsible, the group was always considered as a whole, both in the WebQuest fulfilment and in the data analysis phase.

The methodological plan of this study involved the mobilization of the following data gathering techniques:

Observation of the students solving the Webquest, with the use of an observation grid and a class diary or logbook; Survey questionnaire (I of characterization and II of final opinion) applied to all the participants; Documental analysis of the products created by the trainees with the WebQuest.

The data was gathered in different moments, throughout the study

The WebQuest “Sexually Transmitted Diseases” is described in the article “The WebQuest as a learning methodology in the Adult Education and Training Course of the Society, Technology and Science area” (Barroso and Coutinho, 2009), which integrates the Minutes of the VI International Conference on ICT’s in Education

Table 1. Presential sessions' structure.

Session	Description	Duration	Date
1	- Formation of the work groups; - Creation of the electronic mail addresses; -Contact with the WebQuest – “Sexually Transmitted Diseases”	3 h 00	EFA2 05/03/2009 EFA2 06/03/2009
2	– WebQuest solving	1 h 30	EFA1 e EFA2 11/03/2009
3	– WebQuest solving	3 h 00	EFA2 12/03/2009 EFA1 13/03/2009
4	– WebQuest solving	1 h 30	EFA1 e EFA2 18/03/2009
5	–Organization of the oral presentation of the groups' assignments. -Presentation of the informational bulletins and written assignment. –Self-evaluation of the development of the group work. - Evaluation of the informational bulletins and its presentation by the group. - Selection of the most creative work and informational bulletin.	3 h 00	EFA2 19/04/2009 EFA1 20/03/2009

“Challenges”.

PRESENTATION AND DATA ANALYSIS

Work synthesis

Making a comment on the obtained results, it can be stated that all of the groups got a very positive assessment in the WebQuest's fulfilment and managed to collect the data, select the information in order to organize it and work it correctly. Most participants even managed to make a critical and conscious analysis of the study. In the written assignment structuring and in the informational bulletin production, where more freedom was allowed, the trainees managed to be equally creative and conceive products carefully made and very appealing. Next this study presented the most creative and original informational bulletin and written assignment, chosen in a unanimous manner by the trainees of both classes (Figures 3 and 4).

Trainees' opinion regarding the computer and Internet use, the WebQuest and the fulfilled work

Satisfaction

Regarding the trainees' satisfaction concerning the WebQuest fulfilment, it was noted that the activity

pleased almost all of the trainees involved in the study (95%). Only one trainee referred that she had not enjoyed solving the WebQuest. Next, asking for the construction of open answers. Most of the trainees (47.4 and 42.1%) enjoyed carrying out the WebQuest due to the fact that it was an innovative experience and therefore having learned more about the STD's.

Task motivation

The possibility that the written assignment would be on display in the school library, was not considered a motivation factor for the fulfilment of the WebQuest by 11 trainees (55%). In what concerns the fact that the informational bulletin was to be delivered to all the students from the 9th grade of the “agrupamento” (grouped schools), a task that puts a real life situation in context, was considered a motivation factor to carry out the WebQuest by 12 students (60%) (Table 2).

Opinion on the WebQuest “Sexually Transmitted Diseases”

The obtained data revealed that the total number of trainees (100%) considered that the WebQuest “Sexually Transmitted Diseases” was well organized and not confusing, the different colours used in the texts and titles of the WQ pages helped in its reading and comprehension,

Table 2. Reaction to the task (N=20).

Reaction to the task	Yes		No	
	F	%	F	%
The fact that the written assignment was going to be exposed in the school library was a motivation factor for you to carry out the WebQuest.	9	45	11	55
The fact that the Informational Bulletin was going to be delivered to all the students from the 9th grade was a motivation factor for you to carry out the WebQuest.	12	60	8	40

**Figure 3.** Front page of the written assignment of group G5. (In Spanish)

the number of tasks was needed to understand the concepts, the sites' information was adequate to the answers, the assessment was clear, the navigation through the WebQuest was easy and everyone knew

were he/she was and how to get to each page. On its turn, almost all the trainees (between 85 and 95%) considered that the WebQuest is an easy tool to use, the black background colour did not make the text reading

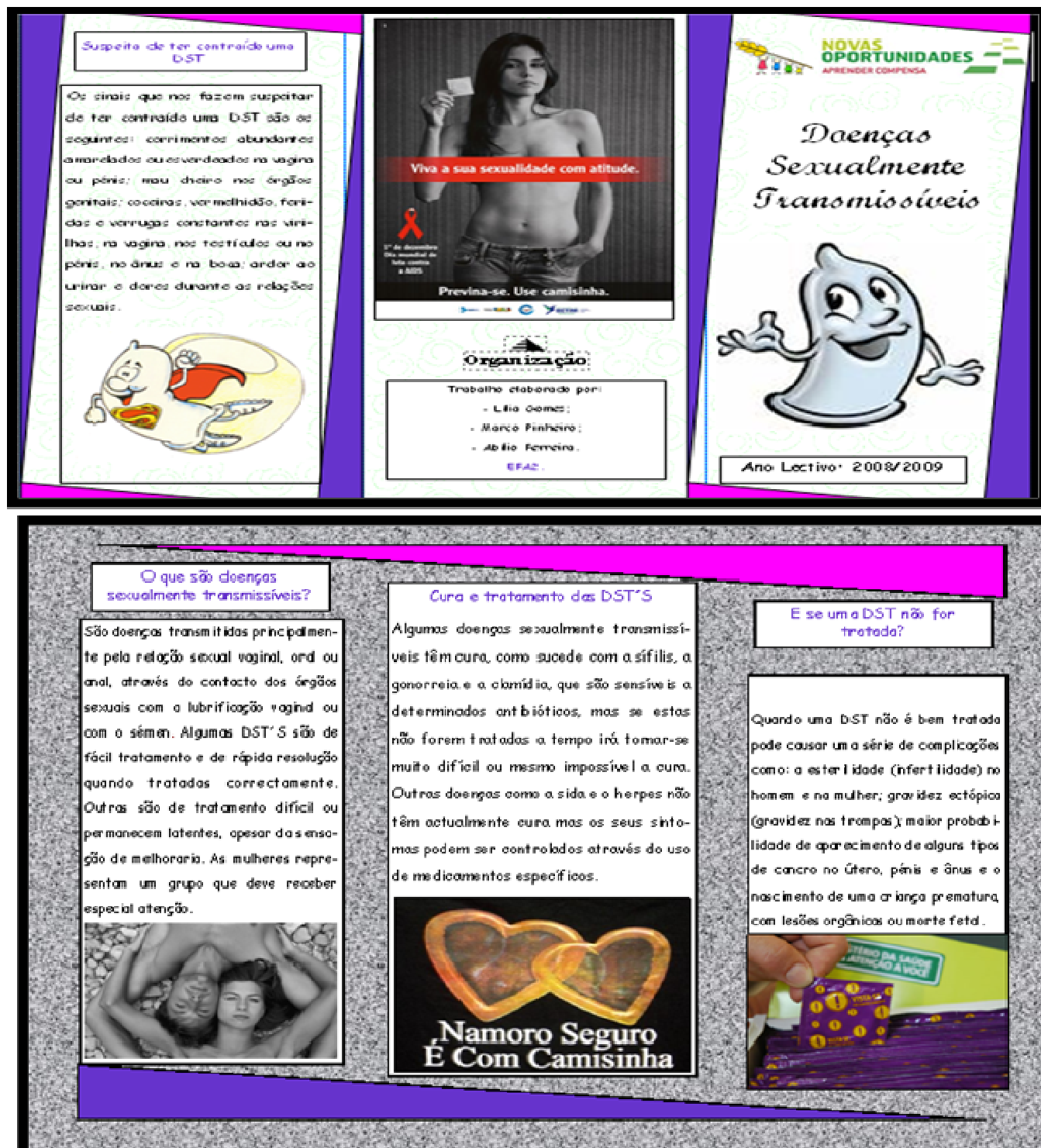


Figure 4. Informational bulletin from group G3. (In Spanish).

difficult, the font size was adequate allowing for good reading, there were enough indications to carry out the task, the proposed tasks were challenging, it did not require too many exercises, in the different tasks it was perfectly understood what one had to do, there was

useful information in the visited "web" pages.

In what concerns the visited web pages, the class is divided, with 50% of the trainees stating that they had to consult other "web" pages to carry out the WebQuest, while the other 50% stated not having the need to do so.

Table 3. Satisfaction over the fulfilled work (N=20).

You enjoyed more to develop the	F	%
Written assignment.	6	30
Informational bulletin.	7	35
Both (Written assignment and informational bulletin).	7	35

The WebQuests influence in the predisposition for group work

All the trainees (100%) considered that it was beneficial to work in group. In the trainees' opinion, working in group led them to help each other in the fulfilment of the assignments (65%). The sharing of ideas was also pointed out by 35% of the trainees as an advantage that allows improving the fulfilment of the final assignment. It is curious to note that the students' favourable answers, regarding group work, are in accordance with the essential conditions pointed out by Johnson and Johnson (1994) to get positive cooperative learning results. The trainees allude to the interactions, the joint construction of knowledge and the individual responsibility for the group's success.

Trainees' opinion if the WebQuest model helps the STD theme learning

Next, the study analyses the trainees' perception of their learning in the STD area with the WebQuest model.

Content learning and the liking for the STS area

This study was interested in knowing to what measure the students considers if the WebQuest helped in the learning of the STD contents presented in the study and to develop the taste for the STS area. By analysing the collected data, it can be said that almost all the trainees (95%) enjoyed using the Web to learn about the STS. Meanwhile, a trainee referred not having liked using the WebQuest to learn about the STD's since it was still difficult for her to master informatics by herself. On its turn, 90% of the trainees considered that, by using the WebQuest, they learned more about STD's.

In what concerns the liking for the STS area, the great majority of the trainees (70%), pointed out that the WebQuest fulfilment helped to develop and increase the taste for the STS area.

Advantages of the WebQuest in comparison with the classes given by the teacher

In the opinion of the majority of the trainees (80%), they would not have learned more if the teacher was the one

explaining the contents and if after they had to solve an assignment, because:

"We are already used to work with the teacher and this way it was a gain since it was a new experience" (D4 trainee); However, 4 trainees (20%) referred that they preferred the classes given by the teacher because: "We always work with different materials and techniques" (A4 trainee).

Opinion of the trainees on the work carried out

The items that fit this dimension focus on the satisfaction of solving the written assignment and/or the informational bulletin and on the trainees' final opinion on all the fulfilled work.

Satisfaction over the fulfilled work

When it is asked to the 20 trainees to signal which work they enjoyed more to carry out, the opinions indicated in Table 3 show that the trainees are somewhat divided. In average, 30 to 35% of the trainees enjoyed carrying out either the written assignment or the informational bulletin or both. The 6 trainees preferred to elaborate the written assignment, because they had less difficulty in its fulfilment and made a greater effort to accomplish it. The satisfaction of the 7 trainees for having fulfilled the informational bulletin was due to the ease of use of the Microsoft's Office Publisher software and by the fact it was a more creative and original work (28.6%). On its turn, 42.8% of the trainees considered the informational bulletin as being a quite interesting and motivating work. The 7 trainees enjoyed to carry out both assignments, due to the acquired knowledge on the STD's and because both were motivating.

Final opinion on all the fulfilled work

Regarding the final opinion of the trainees on all of the fulfilled work, the open answer to this question allowed the characterization of the trainees' opinion in the Table 4. The opinions presented by the trainees focused mostly on the acquisition of knowledge and in the interest on the study's theme "Sexually Transmitted Diseases". The trainees stated that the final assignment was interesting

Table 4. Opinion of the trainees on all the fulfilled work (N=20).

Trainees' final opinion on all the fulfilled work	F	%
The fulfilled work:		
- Was interesting	8	40
- Motivational	4	20
- Allowed the acquisition of knowledge	11	55
- Lack of time for the fulfilment of the whole work	2	10

(40%), and it allowed for knowledge acquisition (55%), having been a very motivating work (20%). Only 2 trainees indicated as a disadvantage the lack of time for the work fulfilment. In summary, this study can state that the great majority of the trainees referred advantages to the cooperative and collaborative work in the WebQuest format, in which all had an important role to play, where one can learn with the others and all can learn with technology. The trainees are in favour of this new learning and thinking form, where their autonomy and information research abilities are promoted, with all feeling comfortable in this field.

On the other hand, at the same time it awakens their interest, it motivates them to learn and personally implicates them more, makes them feel sure of their learning and knowledge construction abilities.

Conclusion

Resorting to the WebQuest was a way to integrate the ICT's in Adult Education and Training, in an organized and systematised manner, within the Generating Core "Health". Throughout this study, it was verified that the trainees worked in group to negotiate their understanding and to conceive the activity's products, using constructive, critic, creative and complex thinking. The competences they acquired were collaboratively developed and therefore the trainees were not individually assessed. The WebQuest beard a precise specification of the objectives to be reached, allowing for the construction and development of knowledge and competences in a constructive way. By carrying out this WebQuest, this study had in mind what objectives the trainees wanted to reach. From which the Key Competences can point out from the STS area of the Generating Core "Health" and the development of competences in oral and written communication, in arguing and group work cooperation, in research, selection and information processing, as well as in self and hetero-evaluation, with such competences being considered essential in today's society. In summary, with the fulfilment of this activity, we involved the trainees in the STD's learning process and prepared them for decision-making in a globalized information and knowledge society.

With the WebQuest's accomplishment, the trainees

were able to build significant knowledge on the STD's, through a constructive, self-regulated, cumulative, cooperative and collaborative learning, leading the student to acquire superior level cognitive processes. With this in mind, it was considered that the use of the digital technology in this study stimulated the trainees' critic spirit, contributing for the digital wisdom which Prensky (2009) speaks of, since it allowed having a greater access to information and, therefore, to different perspectives, enhancing their analysis, planning and prioritization abilities. This allows a greater discernment of the trainees in decision-making. This study can then state that the trainees, by making use of the digital technology in their social lives, professional and private, will become smarter, not only at the informatics technology level, but also at the acquired scientific knowledge level.

This way, the trainees, through the WebQuest fulfilment, acquired competences that will be useful in the information and knowledge society of the 21st century. This study the contribution to the confirmation and acceptance of the WebQuest as an alternate and valid method to build knowledge in a world connected by the Internet, considering that the solving of a WebQuest stimulates the trainees' great interest in the study of several themes and/or concepts, favours mutual help and debate, foments the responsibility in face of work and promotes the development of abilities such as information analysis, selection and synthesis, problem solving and conclusion-making.

Having regard to the study, the conditions under which it took place es utilizados trainees to develop, there are some variants that deserve further study: The same WebQuest could be used in another study with a larger number of trainees who are attending a course with another trainer and EFA, and check what is the opinion of those to complete the WebQuest and work; Be the trainees themselves to develop a WebQuest to learn a specific topic or to develop it further. The WebQuest is a good option for trainees to take a guided search and browse information online.

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